

[COMMITTEE PRINT]

ENERGY CONSERVATION AND RENEWABLE
ENERGY EQUIPMENT EXPORTS: ANALYSIS OF
HEARINGS ON U.S. SOLAR AND CONSERVATION
TECHNOLOGIES IN INTERNATIONAL MARKETS

REPORT

PREPARED BY THE

CONGRESSIONAL RESEARCH SERVICE
LIBRARY OF CONGRESS

FOR THE

SUBCOMMITTEE ON
ENERGY DEVELOPMENT AND APPLICATIONS

AND THE

SUBCOMMITTEE ON
INVESTIGATIONS AND OVERSIGHT

TRANSMITTED TO THE

COMMITTEE ON SCIENCE AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES
NINETY-SEVENTH CONGRESS

SECOND SESSION

Serial JJ



DECEMBER 1982

Printed for the use of the Committee on Science and Technology

U.S. GOVERNMENT PRINTING OFFICE

WASHINGTON : 1982

16-707 O

H702-5

COMMITTEE ON SCIENCE AND TECHNOLOGY

DON FUQUA, Florida, *Chairman*

ROBERT A. ROE, New Jersey	LARRY WINN, Jr., Kansas
GEORGE E. BROWN, Jr., California	BARRY M. GOLDWATER, Jr., California
JAMES H. SCHEUER, New York	HAMILTON FISH, Jr., New York
RICHARD L. OTTINGER, New York	MANUEL LUJAN, Jr., New Mexico
TOM HARKIN, Iowa	HAROLD C. HOLLENBECK, New Jersey
MARILYN LLOYD BOUQUARD, Tennessee	ROBERT S. WALKER, Pennsylvania
JAMES J. BLANCHARD, Michigan	EDWIN B. FORSYTHE, New Jersey
TIMOTHY E. WIRTH, Colorado*	WILLIAM CARNEY, New York
DOUG WALGREN, Pennsylvania	MARGARET M. HECKLER, Massachusetts
RONNIE G. FLIPPO, Alabama	F. JAMES SENSENBRENNER, Jr.,
DAN GLICKMAN, Kansas	Wisconsin
ALBERT GORE, Jr., Tennessee	VIN WEBER, Minnesota
ROBERT A. YOUNG, Missouri	JUDD GREGG, New Hampshire
RICHARD C. WHITE, Texas	RAYMOND J. McGRATH, New York
HAROLD L. VOLKMER, Missouri	JOE SKEEN, New Mexico
HOWARD WOLPE, Michigan	CLAUDINE SCHNEIDER, Rhode Island
BILL NELSON, Florida	JIM DUNN, Michigan
STANLEY N. LUNDINE, New York	BILL LOWERY, California
ALLEN E. ERTEL, Pennsylvania	
BOB SHAMANSKY, Ohio	
RALPH M. HALL, Texas	
DAVE McCURDY, Oklahoma	
MERVYN M. DYMALLY, California	

ROBERT C. KETCHAM, *General Counsel*

REGINA A. DAVIS, *Administrator*

DAVID S. JEFFERY, *Minority Staff Director*

SUBCOMMITTEE ON ENERGY DEVELOPMENT AND APPLICATIONS

DON FUQUA, Florida, *Chairman*

TOM HARKIN, Iowa	HAMILTON FISH, Jr., New York
JAMES J. BLANCHARD, Michigan	F. JAMES SENSENBRENNER, Jr.,
RICHARD C. WHITE, Texas	Wisconsin
HAROLD L. VOLKMER, Missouri	VIN WEBER, Minnesota
HOWARD WOLPE, Michigan	JUDD GREGG, New Hampshire
BILL NELSON, Florida	JOE SKEEN, New Mexico
ALLEN E. ERTEL, Pennsylvania	CLAUDINE SCHNEIDER, Rhode Island
DAVE McCURDY, Oklahoma	RAYMOND J. McGRATH, New York
ROBERT A. ROE, New Jersey	JIM DUNN, Michigan
RICHARD L. OTTINGER, New York	ROBERT E. WALKER, Pennsylvania
JAMES H. SCHEUER, New York	
MARILYN LLOYD BOUQUARD, Tennessee	
ROBERT A. YOUNG, Missouri	

SUBCOMMITTEE ON INVESTIGATIONS AND OVERSIGHT

ALBERT GORE, Jr., Tennessee, *Chairman*

BOB SHAMANSKY, Ohio	ROBERT S. WALKER, Pennsylvania
HAROLD L. VOLKMER, Missouri	MANUEL LUJAN, Jr., New Mexico

* On assignment to Budget Committee for 97th Congress.

GEORGE A. BOLE, S.A.
 GEORGE S. STEWART, JR., CALIF.
 JAMES H. SCHWARTZ, N.Y.
 EDWARD L. OTTEWILL, N.Y.
 THE HARRIS, IOWA
 GABRIEL LLOYD HARRISON, THE
 JAMES A. HANCOCK, MICH.
 JOHN HALLMAN, ILL.
 ROBERT C. PLUMMER, PA.
 SAM WILCOX, ILL.
 ALBERT SMITH, JR., TEXAS
 ROBERT A. YOUNG, MD.
 EDWARD C. WHITE, MD.
 FREDERICK L. VOLKMER, MD.
 EDWARD WALSH, MICH.
 GAIL WILSON, FLA.
 STANLEY S. LINDNER, N.Y.
 ALAN S. SYLVAN, PA.
 JOHN WILKINSON, OHIO
 GUYTON S. WALL, TEN.
 DAVID McNEELY, CALIF.
 MORTIMER H. STODOLSKY, CALIF.

JAMES W. HALL, JR., HONOLULU
 HARRY M. GOLDWATER, JR., CALIF.
 HARRINGTON FURSE, JR., N.Y.
 MARION LILLIAN, JR., N. HOLL.
 HAROLD C. MILLERSON, N.J.
 ROBERT S. WALKER, PA.
 GEORGE S. FORESTER, N.J.
 WILLIAM CARMY, N.Y.
 BARBARA M. F. "JULIE" HARRIS
 P. JAMES STEINBERGER, WASH.
 TIM WELLS, CALIF.
 JOHN CANNON, N.Y.
 JIM (JACK) A. MAC GARTHE, N.Y.
 JOE GORDON, N. HOLL.
 CLAUDE SCHNEIDER, CALIF.
 JOE GORDON, N.Y.
 BILL J. LAMBERT, CALIF.

WALDE P. MANNING
EXECUTIVE DIRECTOR

—

STEWART C. KENNEDY
SIDNEY A. OWEN
MARTIN KESSEL
GEORGE S. KOFF
JOHN V. DUBOIS, JR.
THOMAS R. KRAMER
DANIELA R. SHANESON
ANTHONY C. TAYLOR
WILLIAM S. NICHOLAS

—

DAVID S. JEFFERY
MANAGER, STAFF DIRECTOR

LETTER OF TRANSMITTAL

We are herewith transmitting a report prepared by the Congressional Research Service for the Subcommittees on Energy Development and Applications and Investigations and Oversight entitled: "Energy Conservation and Renewable Energy Equipment Exports: Analysis of Hearings on U.S. Solar and Conservation Technologies in International Markets."

1. To assess the possible effects of recent changes in U.S. Government policies and programs in RD&D and export assistance on the competitiveness of U. S. conservation and solar technologies in international markets.
2. To examine the status and future plans of European and Japanese RD&D programs in energy efficiency and renewable energy.
3. To determine the adequacy of existing U. S. Government programs to promote the sales of American solar and conservation technologies abroad.
4. To understand the policies and programs employed by other industrialized nations to promote the export of their solar and conservation technologies.

Any comments from the Members of the Committee, other Members of Congress, or private individuals will be welcome.


DON FUQUA, Chairman
Energy, Development and
Applications Subcommittee

Albert Gore, Jr.
ALBERT GORE, Chairman
Investigations and
and Oversight Subcommittee



Congressional Research Service
The Library of Congress

Washington, D.C. 20540

LETTER OF SUBMITTAL

December 8, 1982

Honorable Don Fuqua
Chairman, Subcommittee on Energy Development
and Applications
Committee on Science and Technology
House of Representatives
Washington, D.C. 20515

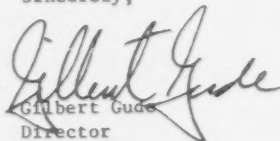
Dear Mr. Chairman:

Enclosed is the report entitled "Energy Conservation and Renewable Energy Equipment Exports: Analysis of Hearings on U.S. Solar and Conservation Technologies in International Markets," which was prepared by the Congressional Research Service at your request.

The report reviews major issues concerning European and Japanese competition with U.S. industries engaged in the production and export of energy conservation and renewable energy equipment. J. Glen Moore and Fred Sissine of the Science Policy Research Division prepared the section on "R&D Policy Considerations," which compares U.S. Government R&D spending and program strategies for technology development and commercialization with other industrialized nations. George Holliday and Raymond Ahearn of the Economics Division prepared the section on "U.S. Export Competitiveness," which identified policy constraints which may affect the overall coordination and organization of U.S. export promotion activities. Theodor Galdi and Jim Heller of the Foreign Affairs and National Defense Division prepared the section on "U.S. Foreign Assistance Program Support," which highlights activities of U.S. technical assistance and banking agencies that help U.S. firms compete abroad, especially in developing countries.

I trust that this report will serve the needs of your committee as well as those of other committees and individual Members of Congress concerned with the international competition in markets for energy conservation and renewable energy technologies. On behalf of the Congressional Research Service, I wish to express my appreciation for the opportunity to undertake this timely and worthwhile assignment.

Sincerely,


Gilbert Gude
Director

RECEIVED

DEC 10 1982

COMMITTEE ON SCIENCE
AND TECHNOLOGY

(V)

BEST AVAILABLE COPY



Congressional Research Service
The Library of Congress

Washington, D.C. 20540

ENERGY CONSERVATION AND RENEWABLE ENERGY EQUIPMENT EXPORTS:
AN ANALYSIS OF HEARINGS ON U.S. SOLAR AND CONSERVATION TECHNOLOGIES
IN INTERNATIONAL MARKETS

Prepared for the Subcommittees on Energy Development and Applications,
and Investigations and Oversight of the House Committee on Science and Technology

Congressional Research Service
December 1982

(VII)

CONTENTS

INTRODUCTION.....	1
R&D POLICY CONSIDERATIONS.....	3
Conservation and Renewable Energy Program Spending.....	3
Conservation.....	3
Solar.....	4
Contrasting Program Strategies.....	4
Government/Industry Cooperation.....	4
Multi-Year Funding and Program Continuity.....	5
Export Markets Emphasized.....	5
Cost Sharing (Direct Subsidies).....	6
Small Business Orientation.....	6
Regulatory Environment.....	7
Industrial Energy Conservation and Photovoltaics Programs.....	7
Industrial Energy Conservation Programs.....	7
Photovoltaic Programs.....	9
Implications of Foreign Activities for U.S. Industry.....	10
U.S. EXPORT COMPETITIVENESS.....	12
Introduction.....	12
Official "Disincentives" to U.S. Exports.....	13
Export Trading Companies.....	14
Other Export Disincentives.....	15
Export-Import Bank.....	16
Export Promotion Programs of the Department of Commerce.....	18
Overseas Private Investment Corporation.....	19
Trade and Development Program.....	19
Coordination and Organization of Trade Policy.....	20
Industrial Policy.....	21
U.S. FOREIGN ASSISTANCE PROGRAM SUPPORT.....	23
Introduction.....	23
Agency for International Development.....	25
Types of Renewable Energy Assistance.....	25
Private Sector Emphasis.....	26
Energy Conservation Emphasis.....	27
Summary of Activities in the Renewable Energy Area.....	27
Trade and Development Program.....	28
Overview.....	28
Criteria for Involvement in Projects.....	29
Activities in Renewable Energy Projects Since 1980.....	29
Potential Projects.....	29
Overseas Private Investment Corporation.....	30
Major Programs.....	30
Small Business Emphasis.....	31
Energy Area Emphasis.....	31
Projects for Marketing Solar and Conservation Products.....	31
Future Prospects.....	32
Responses to Committee Questions.....	32
APPENDIX A: WITNESS LIST.....	34

ENERGY CONSERVATION AND RENEWABLE ENERGY EQUIPMENT EXPORTS:
AN ANALYSIS OF HEARINGS ON U.S. SOLAR AND CONSERVATION TECHNOLOGIES
IN INTERNATIONAL MARKETS

INTRODUCTION

On June 3, 17, and 21, 1982, the Subcommittee on Energy Development and Applications and the Subcommittee on Investigations and Oversight of the House Committee on Science and Technology held joint hearings on "U.S. Solar and Conservation Technologies in International Markets." Participants in the hearings included representatives of firms which consult on international energy markets, representatives from Federal agencies involved with promoting U.S. industry abroad, and others (witness list appears in Appendix A). The hearings focused on the effects of changes in U.S. Government policies and programs in research, development and demonstration and export assistance on the competitiveness of U.S. energy conservation and renewable energy technologies in international markets.

The hearings sought to develop information about the Reagan Administration's energy policy that places greater reliance on the private sector for near-term R&D and commercialization. In accordance with this policy the Administration has cut the conservation and renewable energy R&D budgets and has shifted program emphasis away from near-term efforts and into long-range, high-risk efforts that the private sector would be unwilling or unable to undertake. For FY83 the Administration has proposed to reduce the R&D budgets and commercialization programs even more.

The subcommittees are concerned that the reduction of Federal efforts in these areas is occurring at a time when the U.S. technical and market leads in conservation and renewable energy are being challenged by heavily subsidized foreign competition. In direct contrast to the U.S. program, the Europeans and Japanese are maintaining or increasing their funding in these areas, broadening their support programs, and increasingly emphasizing near-term technologies and export markets. Testimony at the hearings stated that U.S. technical assistance and banking agencies do provide some support to firms interested in selling their products in international conservation and renewable energy markets--especially in developing countries. However, it was also stated that U.S. export performance may indeed be hindered by Government policies and institutional practices in the United States. Among the questions put forth to the witnesses were: "Can American companies compete on their own in world markets against well-financed Government industry teams from abroad?" "Should they be asked to?" And, "Can the U.S. afford a free-market approach to conservation and solar technology development when our industrial competitors are providing heavy subsidies?"

R&D POLICY CONSIDERATIONS *Conservation and Renewable Energy Development Program Spending

A 1981 study of foreign spending on energy programs carried out by DHR, Incorporated, for the Department of Energy and discussed in the hearings found no evidence that our leading foreign competitors are cutting back on their conservation or renewable energy efforts to anything near the same extent proposed by the Reagan Administration for U.S. programs. Indeed, several foreign competitors are proposing significant expansions.

Conservation

Testimony indicated that unless other countries cut back severely on their spending for energy conservation in 1983, the U.S. will spend less on conservation R&D, as a percentage of the energy budget and per unit of primary energy consumption, than any major foreign competitor. Furthermore, foreign spending in conservation is not limited to just R&D as it is in the United States. One witness said that after the R&D phase, foreign industrial energy conservation companies continue to receive direct subsidies from their governments to develop and market their products while their U.S. counterparts have to rely increasingly on their own resources to carry out such activities.

* Prepared by J. Glen Moore, Specialist in Energy Technology, and Fred Sissine, Analyst in Science and Technology, Science Policy Research Division.

Solar

According to Jim Corr's testimony, if Congress approved the Administration request for renewable energy spending in FY83, the U.S. budget would be one of the lowest as a percentage of total energy spending of any developed country. He said further that the U.S. budget in absolute terms would be smaller than the budgets of several other countries.

Contrasting Program Strategies

Testimony revealed a number of major differences in the kind of support the U.S. and its leading foreign competitors give their respective conservation and renewable energy industries. In general, European and Japanese Governments emphasize near-term development, demonstration and information dissemination to get new technologies quickly into the marketplace. They are actively involved in market strategy which enables them to steer their industries into production areas that have potential for exports and job preservation. The U.S., on the other hand, is aiming toward long-range, high-risk R&D, is becoming less and less involved with industry as it withdraws from near-term commercialization, leaving that phase to the private sector. Several major differences in approach were highlighted by the witnesses:

Government/Industry Cooperation

Cooperation between government and the private sector is generally very close in the nations of leading foreign competitors. Dr. Henry Kelly credited Japan's rapid rise in international markets to government/industry cooperation, which he characterized as a "negotiating process." He said that Japan's Ministry of International Trade confers with manufacturers to determine what they can do to meet government targets for improvements in product efficiencies.

Government then chooses competing manufacturers to produce products capable of meeting the targets, and then supports the manufacturers in all phases of product development--research through test marketing. The process encourages the manufacturing firms selected to do the research to invest significant amounts of their own money; the firms that were not selected invest their own funds to keep up. Cooperation between government and industry in Japan has had a dramatic effect on stimulating private research to meet specific government targets.

Multi-Year Funding and Program Continuity

As brought out by testimony, program objectives and budgets for conservation and renewable energy programs generally cover several years in foreign countries while U.S. programs are funded annually. The U.S. approach makes it difficult for industry to plan research based on government policy since this policy is subject to frequent change through the budget process. It was suggested in the hearing that the U.S. program might be improved by exempting energy programs from the annual budget review process. It should be noted, however, that such an exemption could reduce congressional oversight of the program.

Export Markets Emphasized

Foreign countries place a greater emphasis on developing technologies for export than does the United States. Japan and Britain were cited as examples of countries which consider export potential as key criteria for identifying technologies or products for development. Dr. Kelly noted that U.S. industry's lack of attention to energy conservation opportunities in the design of goods for domestic consumption, where consumers are relatively uninformed about the

advantages of energy efficiency, may limit their potential for export. Additionally, energy assistance programs for developing countries were noted as an important way of creating export markets for renewable energy equipment. Chairman Gore noted that European and Japanese Governments spend 10 to 20 times more than the U.S. in this area.

Cost Sharing (Direct Subsidies)

According to testimony, very little foreign R&D money is allocated through competitive solicitations. In order to get industry to follow through with commercialization after Government programs stop, a large portion of foreign research ventures are cost-shared. Cost sharing is a direct subsidy which generally requires a company to put up at least 50 percent of the project's cost. The private money helps ensure that the product being jointly developed by government and industry has commercial potential, which is not always the case when the government pays 100 percent of the R&D cost. In Germany, for example, small or medium size businesses can get up to 50 percent of their engineering and marketing costs paid for by the government. The money is repaid only if the product is a commercial success. Cost sharing can give the foreign firm a competitive advantage over a U.S. counterpart.

Small Business Orientation

As discussed at the hearings, European and Japanese programs are heavily oriented towards small and medium sized enterprises. These firms are generally the least able to underwrite the technical and market risks inherent in the development and marketing of new technologies. Small and medium sized firms are the chief recipients of cost shared funds in countries where they are available.

For example, Mr. Bailly testified that the West German Government supplies up to 50 percent of the costs for engineering development, market planning, and production line development for small businesses. This assistance is to be repaid. However, repayment may be partially or totally waived if the product is not successfully marketed within three years of the last government payment.

Regulatory Environment

Witnesses suggested that the regulatory environment is much less restrictive for leading foreign competitors than it is for industry in the United States. It was observed that foreign governments are more directly involved in market planning through the effective use of incentives, such as cost sharing, which enables them to steer industries in given directions. In contrast, the United States has traditionally used the regulatory approach to leverage industry.

Industrial Energy Conservation and Photovoltaics Programs

Portions of the June 3rd hearing focused on foreign industrial energy conservation policies and programs as they relate to energy-efficient technologies, and on foreign program activities in photovoltaics. Both types of programs support technologies which have significant export and domestic market potential. In both areas, however, U.S. industry is considered to be in danger of losing whatever narrow lead it may now hold in marketing and technology development.

Industrial Energy Conservation Programs

Foreign industrial energy conservation programs are structured to ensure that RD&D results are quickly assimilated into commercial markets. Major aspects of foreign programs were highlighted by Henri-Claude Bailly:

Foreign program management employs multi-year objectives and budgets;

Industry, often through trade associations, participates actively in the definition of RD&D programs and the selection of projects;

Technology development is usually cost shared with industry to ensure commercialization; and

Foreign programs are heavily oriented toward small and medium sized businesses.

Mr. Bailly said that the primary components of all projects are engineering development and commercial demonstration rather than basic or even applied research. As an example, he said that in France more than three-fourths of the government's industrial energy conservation expenditures are related to development and demonstration projects, and no more than 15 percent to basic research.

Jim Corr identified some specific energy conservation innovations and their impacts which put the U.S. steel industry and national economy behind some of its major competitors. As one example, he pointed to West German innovations which link steel production with district heating. Additionally, he observed that the introduction of electric furnaces and plasma processes in the steel industries of other nations not only reduces energy consumption, but also improves the quality of their products. Furthermore, he indicated that continuing innovations in Japan and Germany will likely result in increased competition not only in steel production but also in the sale of steel technology to developing countries which are emerging as major steel producers.

In the consumer appliance market, which the United States currently dominates, Dr. Kelly noted that more efficient European and Japanese appliances have recently become available. The Japanese seem to be making rapid progress in improving the efficiency of their products currently being sold in the

United States. Additionally, the Japanese Industrial Science and Technology Agency has adopted a subsidy program to improve the efficiency of the appliance manufacturing industry. He suggested that this program may have significantly increased private sector funding of R&D in appliance efficiency improvements. Nevertheless, foreign penetration of U.S. domestic appliance markets has been limited to relatively specialized areas so far.

Photovoltaic Programs

According to Robert Ferber, foreign photovoltaic (PV) programs have objectives and employ management techniques similar to those which Mr. Bailly described for industrial energy conservation programs. Foreign governments work closely with individual companies on near-term PV technologies having export as well as domestic potential. A primary objective is the important threshold market which exists in the developing countries where utility grids are not well established.

Foreign PV programs emphasize system activities rather than R&D, with program funds going into technology development and support for the near-term manufacturing needs of industry. For example, over a four-year period the European economic community spent more than twice as much on system activities as it did on R&D (\$40 million and \$18 million, respectively).

Mr. Ferber also testified that foreign PV programs recognize the importance of a local manufacturing capability in establishing markets in developing countries, and are proceeding accordingly to establish such facilities. He noted that U.S. companies tend to orient their products to the domestic market, while foreign companies consider themselves world companies. As an example, he cited a German PV company which has set up applications centers in different parts

of the world. These centers facilitate acceptance of the company's product even though the technology comes from the outside.

Implications of Foreign Activities for U.S. Industry

Foreign efforts to promote the R&D and commercialization of conservation and renewable energy technologies are generally reported to be on the upswing, while U.S. efforts are declining. The implications of these counterposing trends were addressed by several witnesses. In general, they felt that the aggressive strategies of foreign competitors pose a serious threat to the U.S. conservation and renewable energy industries, and that the United States is in danger of losing the narrow technological and market leads it presently holds in many of these areas.

Several witnesses addressed the implications of growing foreign programs and the declining U.S. effort.

Henri-Claude Bailly's work led him to conclude that in the short term, U.S. industry, particularly small and medium sized companies, will be at a competitive disadvantage in the world market for industrial energy efficiency improvements. This disadvantage will stem in part from the fact that foreign companies will continue to receive direct subsidies from their governments to develop and market conservation technologies, while their U.S. counterparts will have to rely strictly on their own resources to carry out such activities. In the mid-term, U.S. technological leadership in the development of conservation technologies will erode, and with it, our ability to sell many ancillary products and services.

Jim Corr concluded his statement by saying that there is evidence that the U.S. energy R&D programs are in danger of falling well behind those of

foreign competitors both in research into new, so-called "high" technologies, and in developing and applying the techniques that can resuscitate older, so-called "declining" industries.

Henry Kelly's testimony centered on energy efficient technology and its effect on U.S. trade. He said that inefficient use of energy can put U.S. products at a competitive disadvantage in international markets simply because they are more expensive. Also, inefficient devices designed for sale in the United States where consumers are relatively uninformed about the advantages of energy efficiency, will not be able to find large markets abroad. Furthermore, foreign manufacturers may be able to move their products rapidly into U.S. markets as the public becomes more sensitive to the advantages of energy efficient devices. Ultimately, he said, if the United States does not make major native use of energy efficiency, the economy can suffer.

In speaking on the U.S. photovoltaic industry outlook, Robert Ferber concluded that both the European and Japanese have the potential of capturing even the large future U.S. domestic market for solar cells if the U.S. industry does not maintain its current lead in photovoltaic technology.

U.S. EXPORT COMPETITIVENESS *Introduction

A focal point of the Hearings was a discussion of the loss of export competitiveness for U.S. industry in general and for solar and conservation technologies in particular. Generally, the witnesses expressed the point of view that U.S. exporters were at a competitive disadvantage vis-a-vis their counterparts in Europe and Japan because the governments of those countries provide a more propitious environment for exporting. Foreign companies were said to benefit from more activist efforts on the part of their governments to promote exports. Moreover, it was claimed that U.S. exporters were handicapped by numerous export disincentives--Government programs and policies which make it more difficult to compete on world market.

Although witnesses at the Hearings concentrated on Government activities which encourage or impede exports, it is important to note that there are other important determinants of U.S. export performance. Exchange rate movements and disparities in growth rates and inflation rates among the United States and its major trade partners are believed by most observers to have a profound influence on U.S. export competitiveness. The rapid appreciation of the U.S. dollar against other major currencies during 1981-1982 has been a particularly important factor. The stronger dollar has had the effect of increasing the prices which foreigners must pay for U.S. exports and decreasing the prices

* Prepared by George Holliday and Raymond Ahearn, Specialists in International Trade and Finance, Economics Division.

which U.S. citizens pay for imports. The result has been a decline in the competitiveness of U.S. firms both in foreign markets and on the domestic market. Low growth rates in the economies of major U.S. trade partners have also had a dampening effect on foreign demand for U.S. exports.

Despite the adverse effects of such underlying determinants of U.S. export performance, the witnesses suggested that concerted action by the U.S. Government could materially improve the environment for exporters of U.S. solar and conservation technologies and for other exporters. Some witnesses favored removal or modification of such existing export "disincentives" as antitrust laws which discouraged formation of export trading companies, export controls, anti-bribery laws and regulations, and taxation of U.S. citizens working abroad. They also advocated improved and expanded export promotion programs. In particular, they proposed an expansion of the Export-Import Bank's lending programs and improvement of the export promotion activities of the Department of Commerce, the Overseas Private Investment Corporation, and the Trade and Development Program. Several witnesses maintained that there was a pressing need for better coordination among the various government agencies involved in making and implementing U.S. export policy. Others suggested that the U.S. Government could learn from the industrial policies of other governments.

The following is a short discussion of the major points made by witnesses regarding the role of the government in improving U.S. export performance.

Official "Disincentives" to U.S. Exports

Several witnesses testified about the adverse effects on U.S. exports of various "disincentives," or barriers imposed by U.S. Government policies. The focus of this testimony was on legislation designed to modify U.S. antitrust

and banking laws in order to facilitate the formation of export trading companies (ETC's). The Congress subsequently passed such legislation, and it was signed into law by President Reagan on October 8, 1982 (P.L. 97-290). Three other disincentives were mentioned: export controls, anti-bribery laws and taxation of U.S. citizens working abroad.

Export Trading Companies

Three witnesses, Congressman Don Bonker, Erland Heginbotham, and Bradford Mead, testified that the formation of export trading companies could facilitate the efforts of small to medium-sized firms to export conservation and renewable energy technology products. Congressman Bonker emphasized the importance of two key provisions of the legislation: (1) relaxation of antitrust laws that make it difficult for firms to combine for exporting, and (2) an allowance for banks to participate in the formation of ETC's.

The antitrust provision, which provides a certification procedure for companies combining resources for the export market, is designed to reduce the uncertainty associated with the operation of joint export activities. The banking provision, which would allow banks to participate indirectly in the ownership of ETC's, is designed to increase the amount of finance and other services available to exporters. Both Mr. Heginbotham and Mr. Mead maintained that passage of the ETC legislation was critical for U.S. producers to be competitive with foreign exporters that benefit from similar trade services.

A small number of large multinational corporations supply the vast majority of U.S. exports. Export expansion proponents maintain that a large number of small and medium-size firms would begin to export or would export more if they were provided the right kind of trade services such as financing, insurance, and market research. Industries characterized by a

high concentration of small- to medium-size firms, such as renewable energy products, potentially would stand to benefit from the provision of such trade services. Furthermore, it is clear that in world markets such as those for renewable energy products, where success depends on many factors in addition to price (e.g., finance, servicing, and insurance), it is important that U.S. exporters do not operate at a disadvantage vis-a-vis their foreign competitors.

Other Export Disincentives

Two witnesses--Donald Stingel and Erland Heginbotham--briefly discussed other government policies that have been identified as "disincentives" to U.S. exports.

Mr. Stingel criticized U.S. export control policy as one of the major threats to U.S. export competitiveness. The Export Administration Act of 1979 authorizes the U.S. Government to impose restrictions on exports for national security, foreign policy or domestic economic reasons. In recent years, it has been employed most often to control exports of military-related technologies to Communist countries and to pursue various foreign policy goals. Mr. Stingel did not suggest that export controls had been an important deterrent to the export of solar and conservation technologies, but claimed that it was a major problem for U.S. exporters in general.

He identified three major shortcomings in the administration of export controls. First, the exporter can never be certain that they will obtain the necessary license for a given export. Second, even when a license is granted, the licensing process involves excessive delays and costs for the exporters. Third, U.S. exporters are sometimes denied the right to export items that are available from their foreign competitors. The net effect,

Mr. Stingel maintained, is to put U.S. exporters at a competitive disadvantage vis-a-vis their foreign competitors.

Mr. Stingel also identified the Foreign Corrupt Practices Act as a major deterrent to U.S. exports. The Act makes it illegal for U.S. citizens to make payments to foreign government officials for the purpose of obtaining business. Mr. Stingel suggested that the Act prevented U.S. corporations from paying reasonable commissions and that U.S. exporters were, consequently, losing many sales.

Mr. Heginbotham added that U.S. taxation of foreign earned income had been an important disincentive to exports because it discouraged U.S. corporations from employing U.S. citizens abroad. Exclusions for income earned abroad were increased by the Economic Recovery Act of 1981, thus providing some tax relief for U.S. businessmen working abroad.

Export-Import Bank

The Export-Import Bank (Eximbank) provides export financing assistance to facilitate exports of U.S. goods and services. It provides loans, loan guarantees and export credit insurance to U.S. exporters. Eximbank is an independent government agency which does not receive appropriated funds. It provides financing with funds from its accumulated capital, now about \$3 billion, and borrows through the Federal Financing Bank. The Export-Import Bank Act of 1945 directs the Bank to provide financing which is competitive with that offered by foreign governments. It directs the Bank to take account of the cost of funds to the Bank. Testimony at the hearings focused on the dilemma posed by the Bank's mandate: since foreign governments sometimes provide heavily subsidized export credits, Eximbank can only remain competitive by lending at interest rates that are lower than its costs of borrowing. John E. Bierman, Senior Vice-President of

the Bank testified that one result of this dilemma was an operating deficit of about \$120 million for the Bank during FY 1982.

Despite the loss, other witnesses maintained that Eximbank's programs were not competitive with those offered by other governments. Donald Stingel, a former member of the Bank's Board of Directors, testified that the official export credit institutions of Japan and Western Europe provide their exporters financial assistance at better terms, thus putting U.S. exporters at competitive disadvantage. He suggested that the situation was getting worse because of budget constraints on Eximbank. John Bierman said that the competitive position of the Bank had been improved through more efficient use of the Bank's resources and through international negotiations that had established guidelines on the terms for official export credits.

Eximbank has been criticized for giving most of its financial assistance to a few large exporters. Donald Stingel and Erland Heginbotham advocated setting aside a portion of the Bank's resources for small and medium-sized exporters. John Bierman, who is the Bank's Small Business Officer, opposed setting aside a specific amount for smaller firms but said the Bank was making an effort to provide them more assistance.

In 1978, the Export-Import Bank Act was amended to require the Bank to appoint an officer responsible for promoting exports of goods and services in the nonnuclear renewable energy area. John Bierman, who was appointed to that position, described the Bank's efforts to promote such exports. His activities had consisted primarily of measures to inform the industry of the Bank programs.

Export Promotion Programs of the Department of Commerce

The Department of Commerce's International Trade Administration sponsors many programs designed to promote exports of U.S. goods and services. Donald V. Earnshaw, Deputy Assistant Secretary of Commerce for Export Development described those programs that had been used to promote renewable energy exports:

- (1) the certification program, which promotes domestic and overseas trade shows;
- (2) domestic export awareness seminars, designed to inform U.S. firms on how to export their products;
- (3) Commercial News USA, a monthly magazine which promotes U.S. products;
- (4) Major Projects, a program which distributes information about export opportunities to U.S. firms; and
- (5) exhibitions and trade missions.

Mr. Earnshaw described briefly how these programs had been used to promote exports of renewable energy products.

In response to questions about the level of funding for Commerce's export promotion programs, Mr. Earnshaw said that funding for some activities, such as the U.S. Commercial Services and the Foreign Commercial Service had increased, while others, such as export development, had decreased. He said that the Department had not reduced the priority for promotion of exports of renewable energy products, but had reorganized several programs.

Bradford Mead, Chairman of the Export Council for Renewable Energy, proposed setting aside \$2 million of the Commerce Department's budget for promotion of renewable energy exports. Both Mr. Mead and Charles F. Sils praised past government export promotion activities and expressed concerns that funding for Commerce Department programs was inadequate. Mr. Mead maintained that a reinvigorated market development program in the Commerce Department would

be the best way to promote such exports. Mr. Earnshaw opposed the idea of setting aside a part of the Department's budget for any industry.

Overseas Private Investment Corporation

Gerald T. West testified that the Overseas Private Investment Corporation (OPIC) insures U.S. private investments against political risks and also provides some foreign investment financing through a program of direct loans and loan guarantees. OPIC also funds feasibility studies and coordinates investment missions to various countries.

Although OPIC's mandate and mission are primarily related to economic development of developing countries, the agency also attempts to promote U.S. exports. Approximately 30 percent of OPIC insurance or finance involves small business. OPIC has targeted the energy sector for special attention, but very limited activity dealing with renewable energy technologies has occurred.

OPIC, as emphasized by Mr. West, is primarily concerned with insuring U.S. foreign direct investors against political risk. Both OPIC's mandate to be self-supporting and the nature of the insurance business, necessitates that the majority of OPIC activity involve large projects and investments. Furthermore, the effect on OPIC activity on stimulating U.S. exports tends to be indirect. OPIC, thus, appears to have limited potential in stimulating exports of renewable energy technologies.

Trade and Development Program

The Trade and Development Program (TDP) was established in July 1980 as a separate component agency of the International Development and Cooperation Agency (IDCA). TDP serves as an authorizing and coordinating program providing technical expertise to foreign governments. The bulk of TDP activities involves

the financing of feasibility studies for development projects in Third World countries.

TDP Deputy Assistant Administrator, John Hardy, testified that TDP grants to plan development projects improves the opportunities of U.S. firms to get follow-up contracts and introduces U.S. technologies and products in new markets. The FY 1983 TDP budget is around \$8 million. Support for only seminar-type activities was contemplated for renewable energy technologies.

The TDP has potential for facilitating U.S. exports but currently is hampered by two prominent constraints. First, the trade promotion objective of the program is constrained by the Third World development objective. Given the more extensive resources that other countries put into similar programs, it is conceivable that U.S. export interests are placed at a disadvantage in cultivating new markets. Second, the TDP funds feasibility projects, but not the actual purchase of hardware and equipment. In cases where a TDP feasibility study recommends the purchase of goods or equipment for the project, U.S. suppliers must rely on other sources (e.g., Export-Import Bank) to obtain favorable financing to remain competitive with foreign producers.

Coordination and Organization of Trade Policy

Several witnesses maintained that inadequate coordination or organization of U.S. export promotion activities hindered U.S. export performance. Erland Heginbotham cited the Agriculture Department's cooperation program as a model of private-public sector cooperation in promoting exports along industry-sector lines. Heginbotham proposed that Commerce Department export promotion programs be organized in a similar fashion.

Bradford Mead emphasized that better coordination of a number of agencies involved in promoting exports--Export-Import Bank, TDP, OPIC, and the Commerce Department--was necessary. Mr. Mead also pinpointed a lack of coordination as a problem in the renewable energy and solar field and recommended the establishment of a U.S. technical assistance subagency to match potential projects with U.S. business capabilities.

There has been a longstanding concern that the U.S. Government could be more efficiently organized to formulate and implement foreign trade policy in general and export promotion activities specifically. In the field of export promotion, the case is often made that the United States is the only major industrial country lacking a single government agency with overall authority and responsibility to promote exports, while other countries rely on strong foreign trade ministries to aid their exporters develop markets abroad and to arrange financing. The deficiencies in the decentralized U.S. approach were most recently addressed by Reorganization Plan Number 3 of 1979, which charged the Office of the U.S. Trade Representative with the primary responsibility for coordinating overall trade policy. The Reorganization Plan, however, provided for only a limited consolidation of export promotion functions carried out by numerous agencies. Thus, overlap in responsibilities and lack of coordination can be expected to serve as contentious issues in the future.

Industrial Policy

Erland Heginbotham expressed a widespread concern about the potential impact of foreign industrial policies on the competitiveness of U.S. industry. More specifically, concern was directed toward Japan's support for high-

technology industries. The elements of Japan's industrial policy are well-known--infant industry protection, cost reductions and product improvements in third markets before challenging U.S. firms in their home market, and the provision of a variety of financial and antitrust assistance.

Foreign government support for emerging, high-technology industries raises difficult questions for U.S. policymakers. Should the United States do more to insure that foreign competitors do not benefit unfairly from government incentives and protection? Are these areas where U.S. business and labor should be working together to compete with foreign business? If the United States decides to more actively support high-technology industries, who decides which industries to support? Who decides whether renewable energy products or robotics should receive more government support? Can Government policymakers be any wiser than the market place?

These are clearly difficult questions, but increased international trade competition, often spurred by foreign industrial policies, forces U.S. policymakers to consider the impact that public policies have on the overall health of the U.S. industrial base. In today's world economy, many analysts believe that the U.S. needs to develop a more comprehensive and consistent policy toward industry--a policy oriented toward the free market and focused on long-term growth.

U.S. FOREIGN ASSISTANCE PROGRAM SUPPORT*Introduction

The printed statements and testimony of the representatives of the Agency for International Development (AID), the Trade and Development Program (TDP), and the Overseas Private Investment Corporation (OPIC) provide an indication of the diversity of U.S. Government policy and programs dealing with aid and the promotion of solar and conservation technology overseas.

AID activities in these two areas are almost entirely oriented to providing technical assistance -- rather than hardware -- to LDCs. AID perceives its mission as providing advice, surveys, studies, and other support, such as workshops, for LDCs to use to determine their best renewable energy sources. Thus, the primary focus of AID activities is on the host LDC rather than U.S. producers. As long as host country governments prefer non-solar energy sources, AID does not provide support for solar projects. This focus does not result in a lot of AID support for U.S. solar product exports.

On the other hand, the focus of OPIC is upon supporting the U.S. private sector, primarily through its insurance programs, but also through smaller loan, loan guarantee, and feasibility study programs. Since 1978, OPIC has targeted small U.S. business projects for attention. However, because of

Prepared by Theodor Galdi, Specialist in International Political Economy, and John Heller, Foreign Affairs and National Defense Division.

the nature of U.S. private sector investment overseas in solar technology at the time of the hearing, OPIC had not yet provided any support for U.S. firms in this area. Other energy related projects assisted by OPIC, however, have involved over one billion dollars in U.S. investments. OPIC-supported renewable energy projects have been mainly in the area of hydro and geothermal electric power production. Pending renewable energy projects total some \$336 million.

Though TDP funding cannot come from foreign aid sources, the solar and conservation activities of the Trade and Development Program most closely resemble those of AID. TDP end products are feasibility studies, seminars, and short-term technical assistance. Certain of the prerequisites for TDP involvement have limited TDP activities in the solar area. The main stumbling block has been the requirement that the host country government be the primary sponsor and strongly supportive of the TDP project. Thus, because most LDCs are more interested in conventional energy sources, e.g., coal and hydro, TDP solar activities have been limited.

Following is a summary -- based upon the transcript of the joint hearings in June -- of the support provided by U.S. foreign assistance programs on behalf of U.S. solar and energy conservation technologies in international markets.

Agency for International Development

AID activities contribute to the expansion of markets for U.S. products and services in the field of renewable energy and energy conservation. AID recognizes the dual dimensions of the LDC energy problem, dependence on oil imports and diminishing fuelwood supplies to meet accelerated demand.

AID goals are to ease immediate constraints to development and smooth transition to mix of energy sources/strategies that can sustain development. Renewable energy projects expend 47 percent of development assistance in energy.

Areas of technical assistance:

- 1) Analysis of energy needs, uses, resources and policies
- 2) Training and institutional development
- 3) Site testing and new technology demonstration
- 4) Increasing conventional and renewable energy supplies.

Types of Renewable Energy Assistance

Ways AID helps increase U.S. export potential to developing countries and promotes growth of the LDC private sector:

1) Photovoltaic products

- Well suited to LDC's remote, low power applications. LDCs are the largest potential market for U.S. photovoltaic manufacturers.
- U.S. products used in pilot projects. Increased volume mechanization and technological advance will make these products increasingly competitive with fossil fuels.
- Cooperation with the Department of Energy and the Center for Disease Control of the Department of Health and Human Services to field-test photovoltaic power refrigerators for preservation of vaccines, previously difficult due to unreliable power sources.
- For Third World needs of 600 kWh or less, even at \$7/peak watt, cost of photovoltaic module is often less than diesel powered systems. Photovoltaics are competitive with utility line extensions of 10 miles for small remote power requirements. They could foreseeably become the cheapest, most reliable source of power for selected decentralized applications.

2) Small Hydropower

- AID-funded National Rural Electric Cooperation Association (NRECA) arranges feasibility studies by U.S. consultants on LDC waterpower potential, thus providing U.S. firms exposure/access to potential markets.
- NRECA has distributed a directory of U.S. turbine manufacturers to over 70 LDCs.
- European/Asian equipment for small hydropower installations is more adapted to local needs/preferences, hence more competitive. (e.g., only one U.S. firm manufactures cross-flow turbines due to limited market expectations. However, this product is popular in LDCs because of simplicity, low maintenance costs, and versatility.)
- NRECA organized a Washington workshop (June 28-29, 1982) for representatives of U.S. small hydropower equipment firms to discuss with AID officials ways in which they can support U.S. technical assistance programs while pursuing their commercial interests.

3) Bioenergy

- An AID wood energy project in the Philippines involves the purchase of U.S. products, opens opportunities for market penetration by U.S. firms and joint ventures with Philippine manufacturers.

4) Geothermal

- AID finds more limited opportunities in commercialization of geothermal, solar thermal, and wind.
- AID-sponsored surveys led to U.S. oil company investments in the Philippine geothermal projects.
- June 1982 — AID co-sponsored a conference on geothermal development for Eastern and Southern African nations located along the geothermally active Rift Valley.

Private Sector Emphasis

AID supports activities to encourage government policy reform, improve institutional capacity, upgrade human resources, and generally stimulate the private sector. Emphasis on the private sector is intended to further development through economic growth, employment, and income generation.

AID co-sponsors workshops, hoping to stimulate renewable energy development endeavors in U.S. and Third World private sectors. The Bureau for Private Enterprise seeks to stimulate Third World private sectors; primary emphasis is on joint ventures with U.S. and LDC firms.

Energy Conservation Emphasis

Compared to other options for increasing LDC energy supplies, conservation has shorter lead time, lower cost, and faster payback. For example, Haitian cement, electric power and bauxite plants use 80 percent of imported fuel. Only major industry cutbacks would allow reduction in imports.

AID funds case studies and audits on energy conservation potential in Third World industry, transport, and commercial buildings. AID energy conservation activities will lead to procurement of more efficient equipment from U.S. firms.

Summary of Activities in the Renewable Energy Area

The Agency for International Development:

- 1) involves U.S. firms in U.S. energy assistance activities;
- 2) sponsors workshops to provide contracts between U.S. industries and LDC energy personnel;
- 3) field tests U.S. energy projects, allowing for adaptation of LDC requirements;
- 4) helps identify potential markets for U.S. firms in the course of AID assistance programs;
- 5) conducts conservation surveys that demonstrate the need for more efficient machinery, encouraging procurement of U.S. products;
- 6) conducts training programs, allowing contact between LDC government officials and U.S. industry representatives;
- 7) circulates information on U.S. products to LDCs.

Trade and Development ProgramOverview

TDP was established in 1980 as a component of the International Development Cooperation Administration (IDCA) with three objectives:

- 1) To foster Third World development
- 2) To promote U.S. trade by stimulating use of U.S. technology, goods and services in development projects
- 3) To facilitate U.S. access to natural resources.

TDP serves as the coordinating/authorizing agency for government-to-government technical assistance involving many U.S. Government agencies and provides countries with access to U.S. technology and planning assistance for projects. Usually these countries already have foreign exchange or access to private lending sources.

The 1982 TDP budget was \$6.9 million; the 1983 Administration request is \$10.5 million. The program is seen as a valuable instrument of U.S. foreign policy. Focus is on middle income LDCs of particular economic importance to the United States. TDP plays an important role in the transition out of concessional assistance.

TDP planning services provided include:

- 1) Feasibility studies to determine appropriate technology for projects
- 2) Workshops/seminars to help host country identify high priority development projects
- 3) Technical orientation meetings where host country representatives with equipment of potential interest
- 4) Short-term technical assistance to assist project development.

Criteria for Involvement in Project

- 1) TDP projects must have high priority in host country
- 2) TDP planning services used only when U.S. firms cannot provide them
- 3) Projects must involve:
 - a) the opportunity for substantial sales of U.S. goods/services and/or
 - b) the enhancement of U.S. access to natural resources
- 4) Eligible countries must be
 - a) "friendly" and
 - b) developing countries that have allocated substantial resources to buy U.S. goods and services for development projects
- 5) Funding must come from sources other than U.S. aid programs.

Activities in Renewable Energy Projects Since 1980

- 1) Solar Energy Application project in Brazil. A pre-feasibility study that included workshops in Brazil and a technical orientation visit to the United States to determine project opportunities of solar heat and agriculture applications.
- 2) Renewable Energy technology orientation workshop in Jamaica in 1980 to show U.S. technologies.
- 3) Solar Energy Technology orientation visit for Quatari official in 1981 to view U.S. solar projects and discuss commercial solar applications.
- 4) Renewable Energy Definitional Mission in 1982 to determine Tunisian interest in symposium on solar technology application in Tunisia.

Potential Projects

- 1) Botswana solar pond brine mining
- 2) Study on Brazilian-U.S. joint venture in solar heat pumps
- 3) Sri Lanka tea leaf drying project.

TDP does not provide financing, therefore must follow development priorities of the host country. These countries have been less interested in solar than in other energy generation systems (e.g., coal and hydropower). Additionally, few U.S. firms have shown interest in TDP solar activities.

Conclusion: U.S. firms are highly competitive in the solar field, but TDP has been constrained in encouraging solar use because of a lack of interest by host governments. As solar technology develops, TDP would like to devote more resources/attention to supporting solar activities.

Overseas Private Investment Corporation

Subject: Role of Overseas Private Investment Corporation (OPIC) in promoting the sale of U.S. solar and conservation technologies abroad.

OPIC contributes to economic and social development of friendly LDCs by insuring U.S. private investments against political risk and by financing a limited number of private projects through loans and loan guarantees. OPIC is not an export promotion agency per se.

OPIC also provides pre-investment assistance in the form of feasibility study funding and incentive grants, and sponsors investment missions to various countries.

OPIC is required by statute to support development projects with trade benefits for the United States and to withhold support from projects that would have negative trade impact for the United States.

OPIC does not provide government-to-government assistance, but assistance to U.S. investment in LDC private sectors. Because of the nature of the solar energy equipment market, OPIC has not had the opportunity to assist U.S. firms in this portion of the alternative energy field, although they are willing and able. Few such projects have been submitted.

Major Programs

1) Political Risk Insurance Program (largest program)

OPIC insures U.S. investors against currency inconvertibility, expropriation, and war, revolution, and insurrection in 97 LDCs. The insurance program covers contractors' and exporters' bid, performance, and advance payment guarantees.

2) The Finance Program

Directs loans from a small Direct Investment Fund. Limited to small businesses and issues all-risk loan guarantees. Limited to U.S. financial institutions.

3) Investment Encouragement Activities (smaller than above two). OPIC sponsors;

a) investment missions, leading investors on missions to explore opportunities in other countries;

- b) feasibility studies, OPIC sometimes shares cost with potential investors;
- c) training grants, through intermediary organizations, OPIC assists development of technical management skills. Modest budgetary resources are utilized.

Small Business Emphasis

OPIC has developed programs to assist small business in identifying opportunities and implementing international development investments.

OPIC has:

- 1) helped provide information on available services/opportunities to more than 12,000 small business executives;
- 2) organized small business seminars on overseas investment; and
- 3) financed a direct loan program exclusively for small business in 30 percent of projects in three fiscal years since 1978.

Energy Area Emphasis

Since 1977, projects to assist non-OPIC LDCs in oil and gas exploration have involved more than \$1 billion in investments. Among these are: dry cell battery in Israel, Nigeria and Sudan; a geothermal project in Brazil; Syrian rural electrification; and contractors' insurance for hydro-electric projects in numerous countries. Results of all of these (conventional energy) projects are expected to have a moderating effect on world oil prices.

Projects for Marketing Solar and Conservation Products

- 1) OPIC assisted the first large scale commercial geothermal energy plant outside the United States. Project was contracted with Philippine subsidiary Union Oil Company, and secured inexpensive energy for local industry, created jobs, and stimulated economy. The Philippines is now second only to the United States in geothermal energy production.
- 2) OPIC sponsored/participated in Caribbean Trade Promotion and Exhibition on Renewable Energy in Jamaica in 1981. The exhibition was viewed as an opportunity for enhanced cooperation between the United States and the strategically important Caribbean region. It was attended by government officials, journalists, and academics from 17 countries. As a result, 15 U.S. participants found potential distributors, joint venture partners. Nearly \$1.4 million in sales were made on the floor; \$5 million in 12-month sales anticipated.

3) OPIC helps facilitate technology transfer. Real problem for LDCs is not to access to but choice and correct implementation of technology. In Southeast Asia region, Japan and Europe have extensive technology acquisition and management training programs. Without similar programs, U.S. firms have been at a competitive disadvantage.

1982 -- OPIC, with the Fund for Multinational Management Education (FMME), established self-sustaining technology training program in all five ASEAN countries. Each institution will train 40-50 ASEAN executives each year. Will improve U.S. access to ASEAN markets.

Future Prospects

These will depend on commercial opportunities in LDCs for U.S. suppliers of solar/conservation technology.

Current outlook is promising; eight renewable energy insurance applications pending. Still in planning stage: three gasahol, two geothermal, two wood/charcoal, one solid waste conversion project. All would total \$366 million in investments.

In future investment missions, OPIC will emphasize investment in solar driers, coolers, and water pumps, as well as wood cookstoves and windmills.

RESPONSES TO COMMITTEE QUESTIONS

Jack Vanderryn -- AID

AID stresses technical assistance rather than resource transfers. Technical training is emphasized to ensure LDC capability to absorb new technologies. AID alternative energy training course in Florida provides LDC experts with overview of renewable technology.

In response to assertion that AID, in fostering host country renewable energy equipment production, curtails potential markets for U.S. manufacturers, Mr. Vanderryn replied that LDCs were interested in building their own capabilities; they cannot be seen only as a potential export market. AID encourages joint ventures which U.S. firms some participation.

John Hardy -- TDP

In response to assertion that the TDP program is inadequately funded (\$5 million, compared to \$40-60 million in Europe and more than \$100 million in Japan), Mr. Hardy replied that the program was young. In addition, the present financial situation discourages expansion, and the Reagan Administration is opposed to export subsidies.

Dr. Gerald T. West -- OPIC

OPIC is forbidden to assist "runaway plants," the name given certain U.S. firms attempting to relocate in LDCs. Part of OPIC's obligation is to review all proposals in light of their impact on the U.S. industrial sector. Over the past 10 years, 75 projects have been turned down due to potential harm to the U.S. economy.

APPENDIX A: WITNESS LISTJune 3, 1982

James Corr, senior associate, DHR Inc.

Henri-Claude Bailly, president, Hagler-Bailly, Inc.

Dr. Henry Kelly, executive director, American Council for an Energy Efficient Economy

Dr. Robert R. Ferber, manager, collector R&D, Jet Propulsion Laboratory, accompanied by James Evans, manager, photovoltaic technology development and applications center, Jet Propulsion Laboratory

Todd Bartlem, research associate, International Institute for Environment and Development

June 17, 1982

Hon. Don Bonker, a Member of Congress from the State of Washington

Donald Stingel, former director, Import-Export Bank

Erland Heginbotham, director for Asia, International Information Reporting Systems

Bradford Mead, chairman, Export Council for Renewable Energy

Charles F. Sills, vice president, Intersol Power Corporation

June 21, 1982

Jack Vanderryn, Director, Energy and Natural Resources, Agency for International Development

John Hardy, Deputy Assistant Administrator, Trade and Development Program

Gerald T. West, Vice President, Overseas Private Investment Corporation

John E. Bierman, Senior Vice President, Export-Import Bank

Donald V. Earnshaw, Deputy Assistant Secretary, International Trade Administration, Department of Commerce